Establishing a Legitimate Knowledge-based Dialogue among Institutions, Scientists, and Citizens during the Covid-19: Some Lessons from Coproduction

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Abstract: Within a STS approach to science policy, the concept of coproduction suggests that scientific explanations and normative evaluations are deeply entangled. Science-based decisions surrounding the use of surgical masks and the measures for contact tracing in the context of Covid-19 show that coproduction can be a powerful democratic instrument to open up science policy to public discussion by highlighting how its statements are negotiated and elaborated.

Keywords: science policy; coproduction; Covid-19; surgical masks; App IMMUNI

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The relations between science, policy, and law represent a major field of analysis in Science & Technology Studies and have the potential to contributing to an improved quality of governance in democratic societies. Indeed, as has been recognized, science and normativity are the two pillars through which democratic societies make sense of themselves, major sources for authority (Silbey 2008), and the main creators of orders and rules (Jasanoff 2012).

Within this field, the concept of coproduction, as developed by Sheila Jasanoff (2004), has proved as a useful tool to look at the interfaces be-

tween science and regulatory processes in all institutional branches, from the legislative (Jasanoff 2005) to the judicial (Jasanoff 1995), and the administrative level (Jasanoff 1990). The notion of coproduction suggests that facts and values, scientific descriptions and normative evaluations, formally separated as the two different logical worlds of "is-ought" (a quasi-definitional formula of modern thought), cannot be set apart when they interact in the real world of science and society. The actual life of science, policy, and law involves a more complex combination of descriptions and prescriptions. Focusing on how the boundaries between facts and values are reciprocally generated, coproduction aims at deconstructing and disentangling them, by looking inside the black boxes of regulatory science. For these reasons, besides being an analytical tool, coproduction can be a powerful democratic instrument to open up science policy to public discussion by highlighting how its statements are negotiated and elaborated.

The current crisis related to COVID-19 has allowed these complex relations to emerge and to become apparent to citizens in all democratic societies through the dialogues, the open and hidden controversies, negotiations, and decisions among politicians and decision-makers, their scientific advisers and the wider scientific communities. The public discovery of the true life of science-based decisions, still often imagined and depicted through the myth of "science speaks truth to power" (Wildafsky 1979), is a relevant opportunity for intentional institutional unveiling and disclosure of the coproduction of science and normativity. This approach would allow, even under less extreme and tragic conditions, to make all parties – namely decision-makers, scientists, and citizens – more aware of the intrinsic dynamics of knowledge and power in negotiating and establishing norms and courses of actions in more scientifically reliable and politically responsible manners. In other words, it would improve the legitimacy of democratic life.

With an unprecedented clarity, the 2020 emergency has given visibility to several phenomena that are both STS well-explored topics and interesting cases for a coproductionist analysis: from the role and construction of experts and expertise to the relations between heads of government and their chief-scientists, to the political choice of single or multiple advice and advisers, to the styles of communication and the management of citizens' rights to receive and ask for information, to the revision of facts in order to reframe decisions and responsibilities.

I would like to focus on two relevant topics that have been central in the COVID-19 crisis and are deemed to become a durable presence in the relations between science and policy in democratic contexts – here by looking at them mostly through the lenses of the Italian situation. One topic concerns how institutions have proved largely unable to reliably and responsibly provide arguments in making normative decision in the face of scientific uncertainty. The other relates to the new epistemic roles for citizens and to the emergence of a broader meaning for citizen science.

As to the institutional communication of how uncertain knowledge has been used in policy decisions, the COVID-19 pandemic has revealed that, when faced with uncertain scientific knowledge, decision-makers have often failed to provide a robust explanation of their reasons for adopting a specific scientific hypothesis. Indeed, policy-makers do not seem equipped, not only scientifically but also politically, to distinguish between actual disagreements among experts in the same field and the heterogeneous assumptions and perspectives characterizing different disciplines (e.g. virology and epidemiology). Moreover, hiding behind presumed objective and certain knowledge is easier than taking responsibility for endorsing an uncertain scientific scenario – perhaps together with a plan to cope with the limits and rate of errors of the vision adopted.

The case for surgical masks, namely their necessity or irrelevance to prevent infection, has been paradigmatic of this apparent awkwardness as well as of coproduction as a tool to clarify and legitimize decisions. At the beginning of the emergency, most policy officers, politicians, and scientific advisers (starting at World Health Organization [WHO] level) failed to openly admit the scarcity of masks as a reason to prioritize their use by the health personnel, while advising citizens to act carefully in the absence of these protective devices. Instead they chose to hide the reality behind the "scientific fact" that masks were useless for healthy people. Only later, when masks became widely available, suddenly their use turned out to be almost mandatory – again with reference to a single scientific paper showing that a six feet distance could not be safe enough (Bourouiba 2020). WHO changed its guidance from "no evidence that wearing a mask by healthy persons (...) can prevent them from infection" (April 4, 2020) (WHO 2020a) to "(m)asks can be used (...) for protection of healthy persons" (June 5, 2020) (WHO 2020b). [1] This single event was literally "unmasking" how the "cherry picking" of scientific data could be tactically managed to back-up difficult policy decisions, instead of operating in transparency and building reciprocal trust between institutions and citizens (Culver 2020; Alvaro 2020).

An institutional culture of dialogue with citizens in science policy, where scientific evidence and proposed norms are presented and discussed by highlighting all the assumptions, correlations, and implications, and where facts and values are opened up in their reciprocal, coproduced establishing credibility and legitimacy, cannot be improvised. This culture has to be daily interwoven in the institutional fabric of relations with citizens in order to generate confidence on both sides. Moreover, this culture requires an updated epistemological vision, where post-normal science – namely when facts are uncertain, values in dispute, stakes high, and decisions urgent (Funtowicz and Ravetz 1993) – becomes the normal condition for all societal choices, and where scientific uncertainty is unfolded to explain how and why normative decisions are made (Toews 2020; Tallacchini 2020).

The second topic for reflection relates to how, in the context of the

pandemic, the circulation of knowledge among institutions, scientists, and citizens has revealed new critical roles for citizens in using scientific knowledge, and perhaps has broadened the meaning of citizen science. These roles and this emerging meaning for citizen science can be better understood and implemented in the light of co-production.

Often and repeatedly, in the past decades, Italian citizens have been represented as scientifically ignorant and irrational, and averse to science and technological innovation. The same accusation has accompanied public acceptance of biotechnology and genetic engineering, electromagnetic fields, and more recently vaccines. In this latest case, the Italian government has adopted a compulsory approach to vaccination (Law 119/2017), also backed-up by a decision of the Constitutional Court (5/2018) portraying scientific certainty and objectivity as the rationale for legally binding measures – even though, according to a "Nature" editorial (2018), this approach seemed more typical of countries with poor democratic traditions, "mostly the post-Soviet Union States".

Indeed, Article 32 of the Italian Constitution encompasses two different visions of the right to health, defined as an individual fundamental right, but also compatible with mandatory treatment authorized by the law when public health is at stake. However, if traditional methods and measures in public health have been developed, especially in the field of infectious diseases, in connection with legal acceptance of compulsory measures and strong limitations of fundamental rights, in the past decade disease control and surveillance have been increasingly made more participatory and primarily based on citizens' individual and collective responsibility (Epstein 1998; Gainotti et al. 2008). Lacking an institutional culture and training for dialogue with citizens, the Italian government did not even try to discuss and build a collaborative vision of the right to health, framed around participation, solidarity, and reciprocity, neither in the vaccine domain nor in other public health domains (from environmental health to screening programs) because adoption of this path involves admitting and coming to terms with scientific uncertainty (Tallacchini 2019, 2020).

What the crisis has shown is that the very same citizens, previously depicted as undisciplined recipients of compulsory measures, have turned into essential actors in dealing with the pandemic (Ministero della Salute 2020a). Indeed, citizens' accurate understanding and implementation of scientific knowledge in their daily behaviour, and more broadly their voluntary compliance with government recommendations about self-certification and self-isolation have been at the core of the containment strategies.

If harmonizing individual and collective health is a key to a health system in line with the principles of a democratic and under the rule of law society, this approach is also coherent with an epistemologically advanced vision about how conditions of scientific uncertainty need to be opened up, shared, and discussed in order to make social decisions more robust

(Stirling and Scoones 2009; Tallacchini 2019).

The scientific information and science-based practices that citizens have acquired, have become acquainted with, and have been implementing since the pandemic has started – e.g. the safety protocols that individuals have to set up and apply in all kinds of private or professional activities (from properly sanitizing personal food items to safely running a commercial activity)– not only require a reciprocally trusted relation with the institutions offering the necessary knowledge, but are also going to affect society as a whole. This phenomenon can be described as a fairly new meaning for citizen science, where institutions have to widely rely on lay people's ability to properly manage knowledge and practices with crucial impact on keeping social life safe. Indeed, if this phenomenon is not entirely new, its dimensions and impact certainly are. From this perspective, Toews et al. (2020) have highlighted that:

> the whole world becomes an extended peer community, as the appropriate behaviour and attitudes of individuals and masses become crucial for a successful response to the virus. This extended peer community is the opposite of a technocratic, number and model-based decision strategy.

Among these new epistemic roles for citizens, where citizens' science-based behaviour and trust are becoming increasingly important, the (often governmental) implementation of tracing digital technologies to predict and control the spread of the virus reveals interesting features (Barsallo Lynch and Zabierek 2020). These forms of so-called participatory surveillance for public health purposes are portrayed as a move towards more democratized practices as they function on a voluntary basis and directly engage the observed subjects. However, making tracking voluntary does not justify its overall legitimacy, as participation *per se* is not significant if the powers involved and all the procedures are not disclosed, clarified, and balanced (Biggeri and Tallacchini 2018). In the Italian case of IMMUNI, the app that "uses technology to alert the users who have had a risky exposure – even if they are asymptomatic", [2] a lot of attention has been paid to the anonymization of data and its deletion after two weeks as a way to gain citizen's trust. Privacy and data protection, however, have been overemphasized as the single concerns in the overall process, even though a lot of uncertainty and undisclosed knowledge surrounds all the administrative mechanisms and potential gaps and inefficiencies involved: first of all, the risk for citizens to find themselves lockdown after an alert without the certainty of being timely tested and unlocked after the quarantine. The document released by the Italian Ministry of Health (Ministero della Salute 2020b) in late May on contact tracing does not mention the issue and limits its provisions to the moment when the user who is SARS-CoV-2 positive is invited by health personnel to download the app and to transfer his data to the Ministry for Health. The app has been pub-

licly released without having taken care of all its practical implications.

Quite interestingly, the problem has been raised, instead, by a WHO brief, in June 2020, that has introduced new criteria "for releasing COVID-19 patients from isolation" (WHO 2020c). WHO was previously recommending two negative RT-PCR tests at least 24 hours apart, but "in light of limited laboratory supplies, equipment, and personnel in areas with intense transmission" WHO reframed its requirements asking "that patients' symptoms have been resolved for at least three days before release from isolation, with a minimum time in isolation of 13 days since symptom onset" (WHO 2020c, 3). To date the Italian government has not adopted a position about implementing the new criteria, which increase dramatically the individual responsibility in managing knowledge as the decision about having recovered from the disease is left to citizens.

Again, the governmental perspective that limits concerns to data protection is an example of the institutional reductionist vision of technoscience – not perceived as a complex process embedded in social and bureaucratic practices – and of the lack of a well-designed plan for citizens while asking them to go blind into implementing the governmental app. Using coproduction to clarify the intersections between knowledge and decision-making may contribute to a better epistemology and an improved confidence in the relations among institutions and citizens.

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[1] According to WHO guidance of April 6: "there is currently no evidence that wearing a mask (whether medical or other types) by healthy persons in the wider community setting (...) can prevent them from infection with respiratory viruses, including Covid-19" (WHO 2020a). According to WHO guidance of June 5: "The use of masks is part of a comprehensive package of the prevention and control measures that can limit the spread of certain respiratory viral diseases, including Covid-19. Masks can be used either for protection of healthy persons (worn to protect oneself when in contact with an infected individual) or for source control (worn by an infected individual to prevent onward transmission)" (WHO 2020b).

[2] IMMUNI Official website, https://www.immuni.italia.it/?gclid=EAIaIQob Ch MIvMTqvvqD6gIVQuvtCh3U5gm9EAAYASAAEgKkZPD_BwE (accessed June 15, 2020).